VIA ELECTRONIC FILING

IN THE CLAIMS

Listing of Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A method for detecting the presence or absence of a wound-specific bacterium in a sample selected from a wound, a body fluid or fluid from a wound, said method comprising the steps of:

a) contacting said sample with a ~~surface-attached,~~ detectably labeled synthetic α1-proteinase inhibitor reactive site loop domain peptide substrate selected from the group consisting of EAAGAMFLEAIPK (SEQ ID NO: 1), EGAMFLEAIPMSIPK (SEQ ID NO: 2), KGTEAAGAMFLEAIPMSIPPEVK (SEQ ID NO: 3), GAMFLEAIPMSIPPE (SEQ ID NO: 4), CGAMFLEAIPMSIPAAAHHHHH (SEQ ID NO: 5), and variants, homologs or fragments of any of said peptide substrates, wherein said variant, homolog or fragment of any of said peptide substrates is a functional variant, under conditions that result in cleavage of said substrate by a protease enzyme produced in said sample by a wound-specific bacterium, wherein said peptide substrate is coupled to both a support and to at least one detectable moiety; and

b) detecting a cleavage or an absence of the cleavage of the substrate, the cleavage of the substrate indicating the presence of the wound-specific bacterium in the sample and absence of the cleavage of the substrate indicating absence of the wound-specific bacterium in the sample.

2. (Previously presented) A method according to Claim 1, wherein the wound-specific bacterium is selected from the group consisting of Staphylococcus aureus, Staphylococcus epidermidis, Streptococcus pyogenes, Pseudomonas aeruginosa, Enterococcus faecalis, Serratia marcescens, Proteus mirabilis, Enterobacter cloeae, Acetinobacter anitratus, Klebsiella pneumonia, and Escherichia coli.

3. (Canceled)

4. (Previously Presented) A method according to Claim 1, wherein the substrate is labeled with a fluorescent probe and a quencher dye molecule.

5. (Previously Presented) A method according to Claim 1, wherein the substrate is labeled by a label selected from the group consisting of spin labels, antigen tags, epitope tags, haptens, enzyme labels, prosthetic groups, fluorescent materials, pH-sensitive materials, chemiluminescent materials, colorimetric components, bioluminescent materials, and radioactive materials.

6. (Previously presented) A method according to Claim 5, wherein the substrate comprises at least one of the peptides selected from the group consisting of EGAMFLEAIPMSIPK (SEQ ID NO: 2) and variants, homologs or fragments thereof.

7. (Previously Presented) A method according to Claim 1, wherein the sample is selected from the group consisting of a wound surface on a subject and a fluid from a wound on a subject.

8. (Previously Presented) A method according to Claim 1, wherein the surface to which said substrate is attached is a biosensor surface associated with a solid support.

9. (Previously Presented) A method according to Claim 8, wherein the solid support is selected from the group consisting of a wound dressing, a container for holding body fluids, a disk, a scope, a filter, a lens, a foam, a cloth, a paper, a suture, a dipstick, a swab, a urine collection bag, a blood collection bag, a plasma collection bag, a test tube, a catheter, and a well of a microplate.

10. (Previously Presented) A method according to Claim 8, wherein the solid support comprises a material required to be free of microbial contaminants.

11. (Previously Presented) A method according to Claim 1, wherein the substrate comprises at least two dissimilar colorimetric components and the substrate is attached to a solid support surface selected from a polymer, a membrane, a resin, a glass or a sponge, wherein modification of the substrate comprises cleaving at least a portion of the substrate that includes one of the colorimetric components, the cleaving resulting in a visible color change.

12. (Previously Presented) A method according to Claim 11, wherein the colorimetric components are covalently attached to the peptide.

13.- 22. (Canceled)